

05—210 Checking and adjusting valve clearance

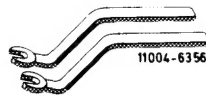
Valve clearance	engine cold (approx. 20 °C)	engine hot (60 °C ± 15 °C)
Intake	0.10 ¹⁾	0.15 ¹⁾
Exhaust	0.30	0.35

¹⁾ 0.05 mm greater for steady ambient temperatures below –20 °C.

Tightening torques	Nm	(kpm)
Bolts for cylinder head cover (engine 615)	5	(0.5)
Nuts for cylinder head cover (engines 615, 616, 617.91)	15	(1.5)

Special tools

Valve adjusting wrench 14 mm (two)



615 589 00 01 00

Holding wrench for valve spring cap



615 589 00 03 00

Feeler gauge holder red



617 589 00 40 00

Feeler gauges

0.10 mm thick
0.15 mm thick
0.20 mm thick
0.35 mm thick



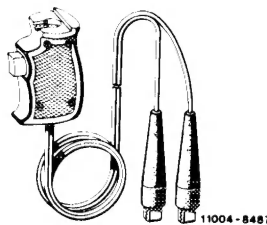
617 589 00 23 00
617 589 01 23 00
117 589 00 23 00
617 589 03 23 00

Socket 27 mm,
1/2" drive to crank engine



001 589 65 09 00

Remote starter switch for
cranking engine (individual
component of compression
pressure recorder 001 589 46 21 00)



001 589 46 21 08

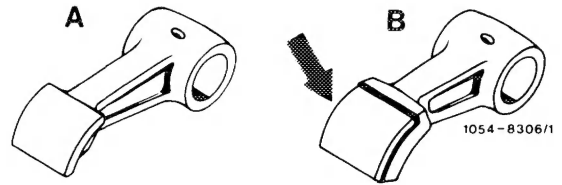
Note

Check and adjust valve clearance with engine hot or cold.

Replace any cap or lock-nut that is damaged.

Upon introduction of chilled casting camshafts and hard-backed rocker arms (B, arrow) the cap nuts were strengthened (larger contact area, arrow) and finished in hard chrome plating (B).

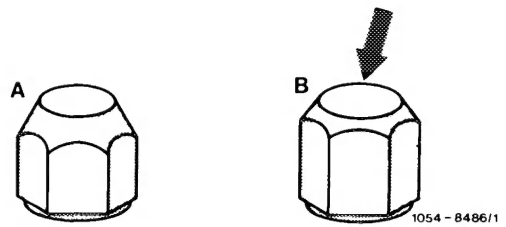
- A Rocker arm, induction hardened and hard chrome plated
- B Rocker arm with hard backing



These nuts can be used with all types of rocker arm.

In contrast, the cap nut (A) without chrome plating must not be used for hard-backed rocker arms.

- A Cap nut without chrome plating
- B Cap nut chrome plated



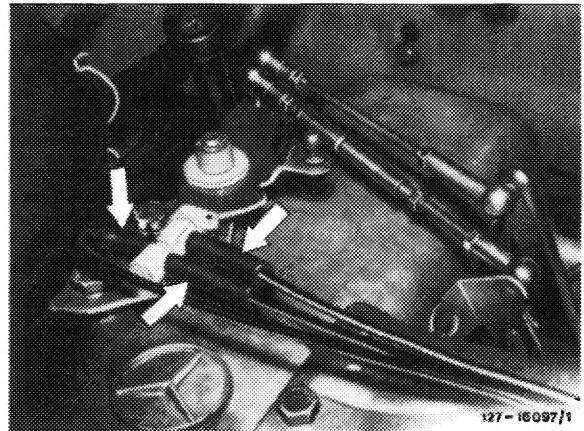
Adjustment

- 1 Remove cylinder head cover.

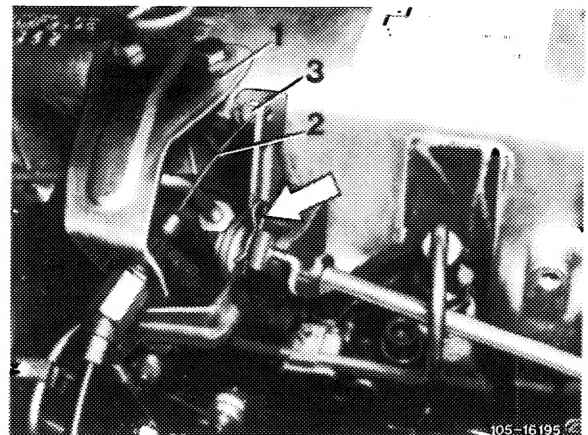
On vehicles with automatic transmissions and vacuum-controlled modulating pressure, additionally disconnect vacuum lines at switch-over valve.

Caution:

Be sure not to cross vacuum lines. The pipe unions and vacuum lines are color coded.



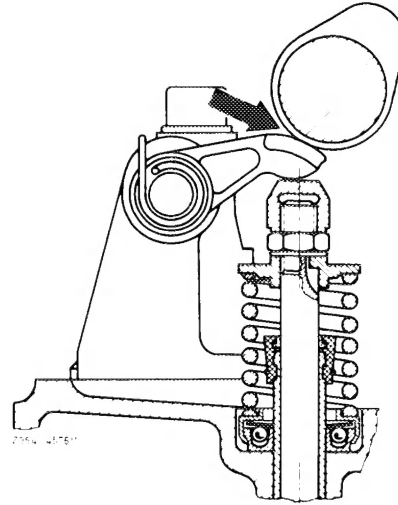
On engines with longitudinal control spindles detach all control rods. Withdraw retainer (arrow) and force longitudinal control spindle in aft direction. Unscrew bracket (1) and unclip idle control cable (2) with plastic sleeve (3).



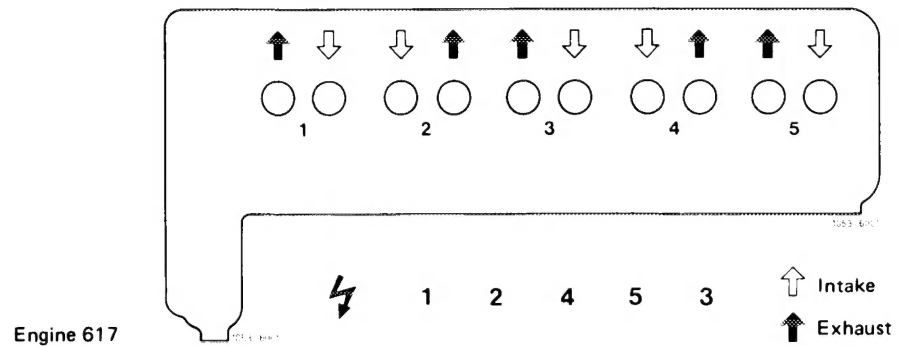
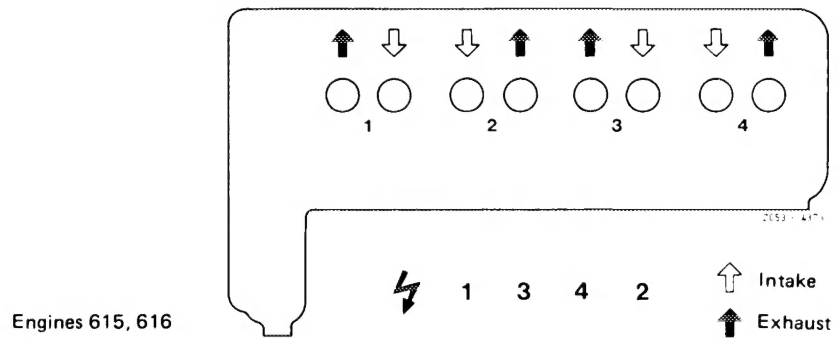
- 2 Set start/stop cable to "stop", turning ignition key to "0".

3 Check valve clearance between contact surface of rocker arm and base cam circle of camshaft (arrow).
The cam peak must be perpendicular to rocker arm.

Valve clearance is correct when feeler gauge fits snugly.



Note arrangement of intake and exhaust valves.



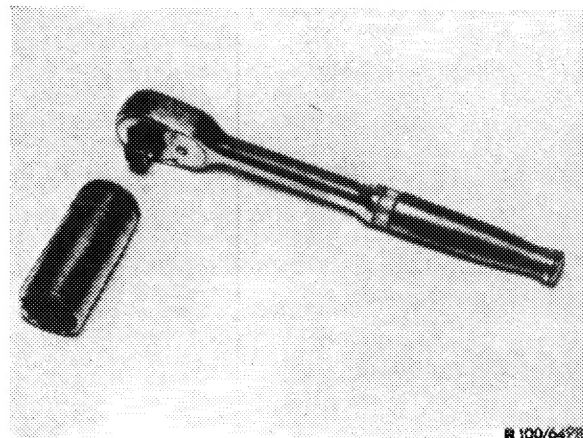
The engine can be cranked as follows:

a) Applying tool combination to forward end of crankshaft

Caution:

Engine must not be cranked on fastening bolt of camshaft sprocket.

Do not turn crankshaft backward.

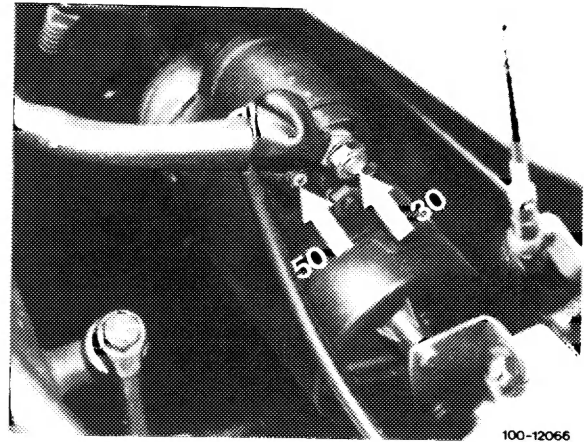


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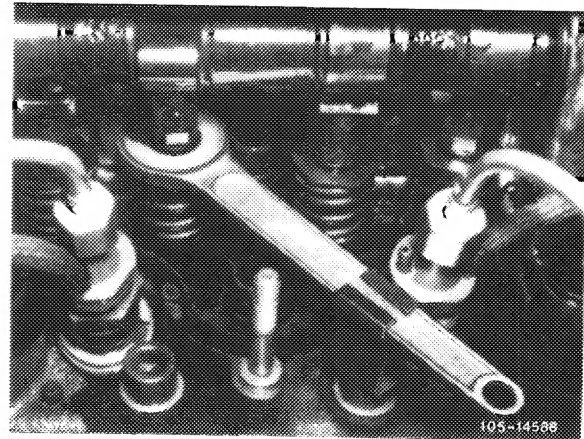
b) Using starter and remote starter switch

Connect remote starter switch to terminals 30 and 50 on starter.

Battery positive can be used in place of terminal 30.



4 Position holding wrench on valve spring cap.

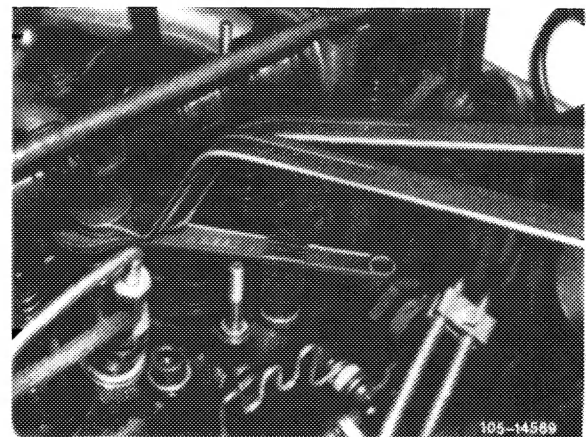


5 Release cap nut, securing lock-nut on valve with valve adjusting wrench.

6 Adjust valve clearance by turning cap nut.

7 Having completed adjustment, secure cap nut with lock-nut.

Cap and lock-nuts on valves which do not need adjusting are also to be checked for firm location.



8 Check valve clearance again.

9 Fit cylinder head cover.